**Amendments to the Specification:**

Please replace the paragraph beginning at page 2, line 1, with the following rewritten paragraph:

Nevertheless, understanding of ~~IT~~ Information Technology (IT) service delivery has improved. Initially, only isolated measurements of infrastructure components, such as servers, hubs and routers, were available. Incrementally, component measurement methods have increased in sophistication, and in general meet the reporting and diagnostic requirements of their respective support groups.

Please replace the paragraph beginning at page 3, line 1, with the following rewritten paragraph:

Global corporations are becoming ever more dependent upon a continuously available, well behaved suite of applications which underlie ~~e-commerce~~ electronic commerce (e-commerce). Existing management systems can look backward to show what has happened, or look at the real-time environment, to show what is happening now. The new management capability required will need to examine selected information from multiple sources and vantage points, perform the necessary analyses and, based on these indicators and in conjunction with historical data, predict (in probabilistic terms) when the system is likely to experience performance degradation. Prediction is a new key capability, for it provides time to react and in the best case avoid any user-visible impact.

Please replace the paragraph beginning at page 5, line 9, with the following rewritten paragraph:

U.S. Patent No. 6,574,149 "Network monitoring device" to Kanamaru et al describes a system that contains nodes that send packets of information to ~~neighbouring~~ neighboring nodes so as to detect whether some nodes have broken away from the system. Here the emphasis is mostly on integrity of the network, not on performance. U.S. Patent No. 6,470,385 "Network monitoring system, monitored controller and monitoring controller" to Nakashima et al. describes a system in which network devices are connected to a plurality of monitoring stations. This point to multi-point connection passes through a broadcast unit that serves as a branching point of multiple connections and is responsible for transmitting information on status of individual stations toward a plurality of monitoring stations in the system. No probing or predictive statistical modeling is used. U.S. Patent No. 6,560,611 "Method, apparatus and article of manufacture for a network monitoring system" to Nine et al. describes a system in which tasks are being sent to various nodes in the network to establish whether a problem exists and automatically opening a service ticket against a node with a problem. This system does not use the internal information related to operation of nodes and does not involve predictive modeling. U.S. Patent No. 6,055,493 "Performance measurement and service quality monitoring system and process for an information system" to Ries et al. discusses a monitoring system that is based on reports that are issued periodically based in indicators obtained via the proposed process of data homogenization. There is no active probing - instead the proposed system uses polling that retrieves status information from network nodes. There is no predictive modeling or automated signal triggering mechanism.

Please replace the paragraph beginning at page 9, line 5, with the following rewritten paragraph:

The modeling problem can be formulated as follows. One is interested in predicting what the transaction time will be at some time in the future. The time

between the present time and this time in the future will be called the "prediction horizon." Determination of a suitable prediction horizon depends on a trade-off between (a) the ability to take timely corrective actions in response to an alarm and (b) prediction accuracy for the selected prediction horizon. The longer the prediction horizon, the more time will be available to respond with effective corrective action but the larger will be the percentage of false alarms, i.e. the "corrective" action is unnecessary. It is therefore important to have enough time to take corrective action before the problem becomes evident to the user, but not so much time that the network is burdened with unnecessary corrective measures. For example, one could choose a prediction horizon to be the minimal time period for which the alarm is practically useful, and then determine what is the corresponding rate of false alarms. Alternatively, one could determine an acceptable rate of false alarms, and then determine whether the corresponding prediction horizon is practically useful. In either case the methodology of the invention allows determination of a suitable balance between prediction horizon and false alarm rate by trial and error.

Please replace the paragraph beginning at page 21, line 9, with the following rewritten paragraph:

We use a regression tree fitting procedure named CART (Classification and Regression Trees), as described in L. Breiman et al. *Classification and Regression Trees*, Wadsworth International Group, Belmont CA (1984) to fit the regression tree to the $X_i$. We control the growth of the tree by pruning it to have a prespecified number of leaves. Typically, we would like to have a tree of diameter no more than three to limit us to three-way interaction terms. The variables that define the path to the leaf are then fitted as an interaction term in the AM. It has also sometimes advantages to consider only two-way interactions even with trees of diameter three.

In this case one can restrict the ~~backfitting~~ back fitting algorithm to using only the terms in the corresponding branch of the tree from the root. We also mention that in addition to this method, Multivariate Adaptive Regression Splines (MARS) method (as described in J. H. Friedman, "Multivariate Adaptive Regression Splines" in *Annals of Statistics*, 1991, vol. 19, beginning at page 1) has proven useful in detecting interactions.